D1

GROUNDWATER QUALITY MONITORING PROGRAM
SAMPLING METHODS FOR VARIOUS CONSTITUENTS

Revised April 12, 2012
Reviewed and Approved by Ken Marshall, Lab Manager, July 28, 2008

PURPOSE

To establish a proper sampling technique which is essential for obtaining meaningful results. In general, sampling encompasses several factors, and each of these factors has a direct bearing on the quality of the sample and the subsequent results. The factors include sample location, type of sample, correctness and quality of sample containers, preservation, accuracy in labeling, and frequency of sampling.

POLICIES

Sampling equipment, for use by water quality samplers, is provided by and available at the District Laboratory. This equipment may include:

- X Ice chest
- X Blue ice
- X Thermometer (Celsius)
- X Chlorine residual kit, total and/or free
- X Bacteriological laboratory analysis forms
- X Physical laboratory analysis form
- X Sterile bacteriological bottles (with Sodium thiosulfate as a preservative)
  120 ml sterile Colilert Bottle
- X Physical bottle, 1,000 mL glass, Teflon Lined Lid
- X ½-gallon plastic bottles
- X 250-ml amber glass bottles
- X Hosebib extender, Brass
- X Timepiece
- X Alcohol
- X Brushes

Always obtain prior permission before attempting anything involving private well sampling or sounding. It is best to have written rather than verbal permission. It should be remembered that anything that goes wrong with a well after or during data collection may

be blamed on the person retrieving the samples. When permission has been granted, always try to get any additional information such as past water quality information, pumping data, water levels, driller's logs, or any known problems with water quality. Private well owners generally know a lot about the area and often have good information about the groundwater or wells.

SAMPLE SITE PREPARATION

In addition to the procedures covered in the Groundwater Quality and Water Level Monitoring Programs Standard Operating Procedures, preparation for sampling at the site involves consideration of the following:

1. The ideal sampling spigot is at least 18" off the ground.
2. The spigot is free from leaks.
3. The water shoots out in a stream.
4. The spout points downward so that dirt cannot fall into it when the water is shut off.
5. Aeration devices and screens should be avoided or removed before sampling.
6. The sampling spigot should be away from human and animal contamination.
7. Avoid spigots overgrown with plants.
8. Avoid sampling within 15 feet of injection devices.

Always inspect the entire area to detect any possible contamination that may influence the quality of the groundwater. This may include oil on the surface around the well, dairy cattle in proximity of the well, etc. Note anything that might cause a future problem. Examine the pumping equipment and the electrical panel if applicable. If anything looks to be hazardous, discontinue the sampling process.

FOR GENERAL SAMPLING PROCEDURES FOR PHYSICAL AND CHEMICAL ANYALYSES, BACTERIOLGICAL AND VOLITALS, PLEASE REFERENCE STANDARD METHODS.

LABELING THE SAMPLE

In the field at time of collection, a permanent maker is used to label the plastic sample bottle with showing date, time, temperature, and field EC. Field paperwork is to be completed in the field.

When delivering a water quality sample to the District Laboratory, refer to LAB SOP 004 – Chain of Custody and LAB SOP 014 – Deletions, Strikeouts/Cross-outs & Over Writing of Data for Chain of Custody.

EASTERN MUNICIPAL WATER DISTRICT
PERRIS, CALIFORNIA

EASTERN MUNICIPAL WATER DISTRICT

EFFECTIVE DATE:		SOP Title:				SOP NUMBER:	
March 2010		Chain of Custody				004	
SECTION:		PREPARED BY:		DATE PREPARED:		REVISION NO:	
Sample Receiving		Catherine Graden		March 2010		1	
ANALYTE:		Storet# or Horizon Analyte Name:		CAS#		REFERENCE METHOD:	
N/A							
REVISION/ REVIEW:	INITIAL / DATE 4/23/12 KLM-1248	INITIAL / DATE	INITIAL / DATE	INITIAL / DATE	INITIAL / DATE	INITIAL / DATE	INITIAL / DATE
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Read and Understood by:

Title	Print Name	Signature	Date

Approved by	Print Name	Signature	Date
Lab Director	Kenneth Marshall		4/24/12
Principal Analyst	Suzanne Watson		4/24/12

1.0 SCOPE AND APPLICATION

1.1 Scope

The purpose of this procedure is to provide guidelines on the proper handling, review, and acceptance of Chain-of-Custody reports and the corresponding samples submitted to the District's Laboratory for analysis.

1.2 Application

This procedure shall be applicable to all samples submitted to the lab for analysis of water, wastewater, and biosolid samples.

2.0 DISCUSSION

District samples are collected to comply with regulations, process control testing, and occasionally as evidence. Data generated by the laboratory may be subpoenaed by regulators and the public. Source Control data can be used as admissible evidence if a polluter is found deliberately disposing toxic material into District sewers. Therefore, the collection of samples and transfer to the laboratory must be documented with a detailed Chain-of- Custody (COC) record. Samples must not be accepted without a defensible COC. A defensible COC must document the handling of a sample from the time of collection to final delivery at the laboratory. All COC's are scanned into the Laboratory Information Management System (LIMS) and made part of the permanent LIMS record.

3.0 PROCEDURE

A chain-of-custody (COC) record must be submitted by the sampler for all samples received at the lab. The laboratory's LIMS is used to create COCs using the Webportal access granted to each Department responsible for collecting samples. The LIMS will not allow samples to be received without a COC containing a unique 'Work Order ID' number. The COC record must be signed by any person given possession of the sample including the individual receiving the sample at the lab. The chain-of-custody record must include signatures from the person relinquishing the sample and the person receiving the sample. An exact time and date must also be recorded at the time the sample is transferred. Samples used for evidence must be stored in a secure area with access limited to the receiving person signing for custody of the sample(s).

3.1 Upon arrival at the laboratory, the COC must be examined for completeness:

- 3.1.2 The COC must adhere to the 'Strikeout, Cross-out, and Deletion' policy (see SOP #014.
- 3.1.2 The sampler must sign and date the attestation section.
- 3.1.3 If a courier is used to deliver samples to the lab, the individual collecting the sample must relinquish custody to the courier by signing and dating the COC.
- 3.1.4 The sampler/courier must relinquish the sample to the sample receiving person.
- 3.1.5 The section describing the sample(s) must be completed with dates, times, and sample name/location.

3.1.6 Arrival temperature and time must be noted on the COC.

3.2 If the COC is complete, sample(s) are logged into LIMS using the unique 'Work Order ID#' printed on the COC. A lab number is assigned to each sample by LIMS. Bottle labels are generated by the LIMS. All aliquots split from a sample shall be labeled with LIMS labels containing the lab number, sample description, and tests requested.

3.3 The existence and condition of any tape custody seals, securing the lid of the bottle, must be noted. If the seal has been broken, it must be documented and initialed on the COC record by both parties.

3.3.1 If the sample requires a preservative prior to sending it to a contract lab, the seal must be broken by the lab person receiving the sample. Upon preserving the sample, a new custody seal must be applied and initialed.

3.3.2 If the sample requires a preservative and is to be analyzed by in-house staff, the custody seal shall be broken and the time and date shall be noted on the COC record.

3.4 A photocopy of the COC record may be given to the sampler.

3.5 Samples used for evidence must immediately be locked into the secured module located inside the walk-in refrigeration unit in Sample Receiving. During normal working hours, the walk-in refrigeration unit is to remain unlocked; however, the security module must be kept locked at all times.

3.6 The COC must be scanned into LIMS and retained as a permanent record.

3.7 Samples submitted to contract labs for testing will be released using the LIMS generated 'Subcontract Lab' COC. Upon arrival of the contract lab courier for sample pick up, the COC record shall be signed by the responsible parties thus relinquishing custody of the samples. The samples shall be removed from the secured module and the time and date relinquished to the contract lab shall be recorded. A photocopy of the COC record shall be made and placed in the book labeled "Contract Laboratory Chains of Custody" while awaiting results from the contract lab.

3.8 The 'Subcontract Lab COC' is scanned into LIMS with the Batch report upon entry of the data.

3.9 Unless instructed otherwise, samples shall be refrigerated and kept in the secured module for thirty (30) days after completion of the analyses. Samples shall be disposed of by proper methods after this time.

4.0 REAGENTS AND APPARATUS

N/A

5.0 QUALITY ASSURANCE/QUALITY CONTROL

5.1 Quality Assurance shall be maintained by recording the inside temperature of the sample receiving refrigeration unit on a daily basis. Refer to SOP 003 for specific guidelines regarding this procedure.

5.2 Quality Control shall be performed on sample preservatives prior to their use if certification is not available.

6.0 CALCULATIONS

N/A

7.0. CALIBRATION

N/A

8.0 SAFETY, HAZARDS, WASTE DISPOSAL

8.1 Safety
Preservation of samples with acids and bases must be performed within a fume hood while wearing gloves, lab coats, and safety glasses. In addition, a face shield and rubber apron is recommended. Review MSDS sheets for acid and/or base used as preservatives before handling these chemicals.

8.2 Hazards
Source Control samples are often collected from sewers and must be handled wearing gloves, lab coats, and safety glasses. Wastewater and sewage samples are biohazards.

9.0 REFERENCES

9.1 SOP 207, "*HORIZON Sample Login*".

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NAME OF SOP:	SOP NO:	APPROVED BY:
Deletions, Strikeouts/Cross-outs, & Over Writing of Data	014	
SECTION:	**DATE:**	**SOP COMMITTEE APPROVAL:**
General	07/2009	
PREPARED BY:	**REVISION NO:**	**REVIEW DATE:**
Ken Marshall		

1.0 SCOPE AND APPLICATION

1.1 Scope
The purpose of this procedure establishes EMWD Laboratory policy on deletions, strikeouts, cross-outs, and overwriting laboratory data and records.

1.2 Application
This procedure will be applicable to all hand written and computer generated information recorded on batch reports, log books, quality assurance sheets, and all other laboratory related documents.

2.0 DISCUSSION

Analytical data produced by EMWD's Laboratory is used to determine compliance with water, wastewater, and biosolid regulations. Raw data, reports, and supporting documentation are considered public record and may be subpoenaed by regulators, the courts, and/or the public at anytime. Therefore, all recorded information must be legally defensible and able to stand the critical scrutiny of anyone attempting to find fault in lab data and records.

It is normal to make mistakes in recording information. Furthermore, it is expected that changes and corrections to written documents will occur. Calculations, recalibration of instruments, and common analytical mistakes are normal occurrences in the daily operation of a lab. However, written information must be presented in a manner that removes any and all doubt that forgery and/or falsification of data has taken place.

Arizona Administrative Code **Title 9, Ch. 14 states "**No portion of a record or report of compliance testing {may be} altered or deleted to hide or misrepresent any part of the data." (See Reference below.)

3.0 REAGENTS AND APPARATUS

3.1 Reagents --none

3.2 Apparatus--none

4.0 PROCEDURE

4.1 Deletion of Data – all laboratory data will be written in permanent black ink. Never erase, eradicate, or completely obscure words or numbers to remove errors. The use of liquid paper

or similar correction media shall never be used to correct written data and notes. The use of erasers or 'erasable-ink' shall never be used to change written documents. Information shall never be scribbled out or concealed by darkening information with ink.

4.2 Strikeouts of Data – when corrections to written data are made, a single line shall be used to 'strikeout' the information so that the erroneous entry is still legible. The corrected value shall be written next to the strikeout. Initials, employee number, and date shall be written near the strikeout in a clear manner. In most cases, a written explanation of why the strikeout occurred should be included on the document.

4.3 Overwriting of Data – Numbers and letters shall not be overwritten and must be struck out if a change is made. Examples of overwriting of data include changing a '7' to a '9', or the letter 'A' to a 'B'. Punctuation such as a comma shall not be change to a period. Completed words shall not be over written with changes.

5.0 QUALITY ASSURANCE/QUALITY CONTROL

5.1 Quality Assurance

Checking for deletions, strikeouts, and overwriting of data shall be part of the daily review for batch reports. The approver must insure that initials, employee number, date(s), and an explanation are included on all reports containing changed data.

If missing information is noted during the review process, the approver must seek out the individual making the change and obtain the missing information. Documents shall not be approved or scanned into the Nugensis database unless changed data is properly documented.

5.2 Due to the significance and importance of this policy, each new and existing Laboratory personnel will be required to sign an affidavit acknowledging they have received, reviewed, and understand the requirements of this Standard Operating Prcedure. A copy of this affidavit shall be retained in the employee's training file.

6.0 CALCULATIONS

Not Applicable

7.1 Safety

Not Applicable.

8.0 REFERENCES

Arizona Administrative Code **Title 9, Ch. 14**
Department of Health Services – Laboratories
December 31, 2006 Page 1 Supp. 06-4
TITLE 9. HEALTH SERVICES, CHAPTER 14. DEPARTMENT OF HEALTH SERVICES LABORATORIES,
R9-14-617. Laboratory Records and Reports

9.0 CONFIRMATION AND ACKNOWLEDGEMENT

I, the undersigned employee of Eastern Municipal Water District's Water Quality Laboratory, acknowledge that I have received a copy of the above mentioned policy; and have read and understand the policy for correcting and changing laboratory data and records. A copy of this signed CONFIRMATION will be retained in my laboratory training file.

_____

Printed Name & Employee Number

_____

Sign and Dated